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Supreme Court, U.S.
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IN THE

Supreme Court of the United States

PIONEER MAGNETICS, INC.,

Petitioner,

v.

MICRO LINEAR CORPORATION,

Respondent.

ON PETITION FOR A WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

PETITION FOR A WRIT OF CERTIORARI

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QUESTIONS PRESENTED

In *Warner-Jenkinson Co. v. Hilton Davis Chemical Co.*, 520 U.S. 17 (1997), this Court unanimously reaffirmed the doctrine of equivalents as an important tool to battle copyists who make insubstantial changes to a patented invention. However, the United States Court of Appeals for the Federal Circuit has refused to allow this sensible tool to be utilized in a broad array of cases by holding that any amendment that narrows a patent claim and is related to any statutory requirement results in prosecution history estoppel. *See Festo Corporation v. Shoketsu Kinzoku Kogyo Kabushiki*, 234 F.3d 558 (Fed. Cir. 2000).

In the wake of the controversial ruling of the Federal Circuit in *Festo*, a panel of that same court has held in this case that even an inadvertent amendment to a claim made without any bearing whatsoever on patentability is subject to prosecution history estoppel. Thus, even before this Court has had occasion to rule on the sweeping changes to the patent law caused by the Festo decision, the Federal Circuit has gone even further, broadening the application of estoppel to include even those amendments which have no nexus to the "related to patentability" threshold required by this Court. *Warner-Jenkinson*, 520 U.S. at 33.

Thus, even if this Court denies certiorari in *Festo*, it must certainly not do so in this case. It cannot be the law of the United States that inadvertent changes made to patent claims during prosecution which are unrelated to patentability require the patent holder to forfeit the well-established and long-recognized right to the doctrine of equivalents.

The questions presented in this petition, therefore, are as follows:

1) Whether a single word that was added inadvertently to a claim in the process of prosecution without any nexus to a statutory requirement for patentability automatically gives rise to prosecution history estoppel; and

2) Whether a single word that was added inadvertently to a claim and not in response to any objection from a patent examiner automatically gives rise to prosecution history estoppel.

STATEMENT PURSUANT TO RULE 29.6

Petitioner, Pioneer Magnetics, Inc., has no parent corporation and no publicly held company owns 10% or more of its stock.

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Pioneer Magnetics, Inc. hereby petitions for a writ of certiorari to review the judgment of the United States Court of Appeals for the Federal Circuit.

OPINIONS BELOW

The Federal Circuit's opinion affirming the district court's judgment in favor of respondent Micro Linear Corporation is reported at 238 F.3d 1341 and is reprinted herein as Appendix A (App. 1a-11a). The district court's grant of summary judgment as stipulated to by the parties is reprinted as Appendix B (App. 12a-17a). The district court's final judgment of non-infringement is reprinted herein as Appendix C (App. 18a-19a). The district court's Markman interpretation of U.S. Patent 4,677,366 is reprinted herein as Appendix D (App. 20a-38a).

STATEMENT OF JURISDICTION

The Federal Circuit entered its judgment in favor of respondent Micro Linear Corporation on January 23, 2001. The Chief Justice granted an extension of time for filing this petition to and including May 23, 2001. The jurisdiction of this Court is invoked under 28 U.S.C. § 1254(1).

CONSTITUTIONAL AND STATUTORY PROVISIONS INVOLVED

Article 1, section 8, clause of the Constitution provides:

> Congress shall have the power . . . to promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their Respective Writings and Discoveries.

35 U.S.C. § 271(a) provides:

> "Except as otherwise provided in this title, whoever without authority makes, uses, offers to sell, or sells any patented invention, within the United States or imports into the United States, any patented invention during the term of the patent therfor, infringes the patent.

STATEMENT OF THE CASE

The Federal Circuit in this case has significantly departed from the well-established "doctrine of equivalents" which has been a fundamental principle of patent law for more than a century. The doctrine of equivalents provides that even if a product or process does not literally infringe upon an express term of a patent claim, it may still be found to infringe if there is "equivalence" between an element of the accused product or process and the claimed element of the patented invention. *Warner-Jenkinson*, 520 U.S. at 21. The Federal Circuit in this case, however, has virtually eviscerated the doctrine of equivalents by holding that every claim-narrowing amendment, including amendments not made for reasons of patentability and even inadvertent amendments, creates prosecution history estoppel.

This drastic narrowing of the doctrine of equivalents will undermine the careful balance between the public disclosure of inventions on the one hand, and the limited exclusivity guaranteed by Article 1, Section 8 of the Constitution on the other. As a result, the Federal Circuit's decision in this case which directly conflicts with prior decisions of this Court may seriously disrupt the patent system.

I.

THE PATENT

Petitioner Pioneer Magnetics, Inc. owns United States Patent No. 4,677,366 titled "unity power factor power supply." (App. E). The patent describes circuitry designed to receive variant levels of input voltage and to emit a constant output voltage, thereby providing a steady electrical current source to another circuit.

II.

THE PROSECUTION HISTORY OF PIONEER'S PATENT

The Pioneer patent is directed to a "unity power factor power supply." Briefly stated, the Pioneer patent discloses a particular type of power supply which typically would be implemented as circuitry that is connected to an alternating current line (e.g., an electrical wall outlet) at its input and that provides voltage and current at its output. The claimed control circuit is comprised of sub-circuits, one of which is the "switching analog multiplier circuit." A switching multiplier is a particular class of multiplier and requires a switching action for the proper operation of the multiplier. A clock input provides a periodic signal to switch transistors in the multiplier circuit between on and off states, and such a clock input can be provided by a timer and ramp generator. (App. E).

The application for the Pioneer patent contained nine claims. In the first Office Action, the Patent Examiner rejected claims 1-5, 8 and 9 as being anticipated under 35 U.S.C. § 102(b) by U.S. Patent 4,437,146 to Carpenter. (App. 45a).

However, the Examiner did not assert any prior art rejection against dependent claim 6. Instead, he rejected dependent claim 6 solely under the second paragraph of 35 U.S.C. § 112, which requires that the patent contain "a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same. . . ." The Examiner stated that the "last-named circuit means" in claim 6 lacked proper antecedent basis in the claims. (App. 45a).

The patent applicant did not challenge the Examiner's prior art rejection of claims 1-5, 8 or 9. Instead, the applicant corrected the minor problem in the form of the "circuit means" language in claim 6 and re-wrote claim 6 in independent format. (App. 47a-50a). The applicant did this by incorporating all of the limitations that were in dependent claim 6 into independent claim 1. (App. 48a-49a). He then canceled claim 6 and explained what he had done in his remarks:

> Claims 2-6 have been cancelled and the subject matter of those claims has been incorporated into amended claim 1. . . . It is believed that there is no showing in the cited Carpenter Patent 4,437,146 of the specific combination set forth in amended claim 1. It is also noted that *amended claim 1 represents original claim 6 in independent form*, and that claim 6 [as incorporated in claim 1] has been amended to overcome the objection raised under 35 USC 112. Accordingly, amended claim 1 is believed to be allowable.

(App. 49a-50a). (Emphasis added.)

At the same time, the applicant *voluntarily* added a limitation that was not in claim 6. The applicant specified the "multiplier" that claim 6 had originally incorporated by reference from claim 4 to be a "switching" multiplier. (App. 48a-49a). The applicant did not add this limitation to overcome an objection by the Examiner or to to meet any requirement imposed by the Examiner.[1] In fact, there is evidence in the record that the limitation was actually made inadvertently.[2]

---

1. While the Federal Circuit concluded that the "switching" amendment was made to avoid the prior art, not even the trial court reached such a conclusion and it is a finding wholly unsupported by any evidence in the record. Claim 1 was also amended to add a "pulse width modulator." (App. 48a-49a). This limitation alone was sufficient to distinguish over the art since a "modulator" was nowhere taught or suggested in the only reference that was relied upon to reject the claims — the Carpenter patent. There is also no evidence in the record that it was obvious to modify the Carpenter patent to utilize such a component. To the contrary, the Patent Examiner failed to reject a claim over the prior art that had the "modulator" limitation, but not the "switching" limitation – Claim 6. It was also illogical for the Federal Circuit to imply that Pioneer conceded that "switching" was needed to distinguish over the prior art simply because Pioneer remarked in the amendment that "there is no showing in the cited Carpenter Patent . . . of the specific combination set forth in amended claim 1 . . . ." (App. 49a-50a). That was nothing more than an express statement of the novelty that must exist in every patent claim under 35 U.S.C. § 102. Thus, the record clearly shows that there was no reason whatsoever for adding the "switching" limitation.

2. Claim 7 was amended to depend on claim 1 but also recited that the multiplier "is a switching type." (App. 48a-49a). Thus, the same "switching" limitation was affirmatively recited in both an independent and a dependent claim, showing an inadvertent drafting error. The addition of the word "switching" to claim 1 was also not noted in applicant's remarks. To the contrary, applicant stated that "amended claim 1 represents original claim 6 in independent form. . . ." (App. 50a).

III.

DISTRICT COURT LITIGATION

Pioneer sued Micro Linear for patent infringement under 35 U.S.C. § 271. Following the district court's finding that file wrapper estoppel was applicable, the parties stipulated that summary judgment of non-infringement be granted to Micro Linear on the grounds that its accused products do not literally infringe any of the claims of the 4,677,366 patent and that prosecution history estoppel bars Pioneer from asserting under the doctrine of equivalents. Pioneer expressly preserved its right to appeal the validity of the district court's ruling. The court granted summary judgment and entered a final judgment of non-infringement. (App. 12a-19a). A timely notice of appeal was filed.

IV.

FEDERAL CIRCUIT OPINION

Pioneer appealed the district court's summary judgment that none of Micro Linear's products infringe the '366 patent. On appeal, Pioneer advanced a number of substantive and procedural reasons to support its contention that the district court's judgment was in error. In the course of affirming the district court's opinion, the Federal Circuit addressed two of the issues presented by Pioneer.

The first issue considered by the Federal Circuit panel on appeal was whether prosecution history estoppel should be applied to a limitation that was voluntarily added to a patent claim as it was being rewritten in independent format when such limitation was unrelated to any issue of

patentability identified by the patent examiner. Relying exclusively on its *Festo* decision, the Federal Circuit panel held that the mere fact that the amendment was voluntary did not shield it from prosecution history estoppel. (App. 9a). The panel also applied the presumption set forth in *Festo* which provides that any amendment made to a claim is substantially related to an issue of patentability in the absence of clear evidence in the prosecution history to the contrary. (App. 7a-9a). The Federal Circuit took *Festo* further, however, and held that even an inadvertent amendment gives rise to prosecution history estoppel. (App. 8a). Accordingly, on January 23, 2001, the Federal Circuit affirmed the district court's judgment of non-infringement. (App. 11a).

REASONS FOR GRANTING THE WRIT

Petitioner seeks review of the judgment below because: (1) it is in direct conflict with this Court's decision in *Warner-Jenkinson*; and (2) it continues the erosion of patentee rights and protection which began with the Federal Circuit Court of Appeals' decision in *Festo*.

For over a century, the Supreme Court has consistently held that a component infringes an element in a patent claim, even if it is not identical to that element, so long as it is equivalent to that element. *See Warner-Jenkinson Co. v. Hilton Davis Chemical Co.*, 520 U.S. 17, 117 S. Ct. 1040, 1054 (1997); *Graver Tank & Mgf. Co. v. Linde Air Products Co.*, 339 U.S. 605 (1950); *Winans v. Denmead*, 56 U.S. 330 (1854). However, the full scope of equivalents may be barred by an estoppel when a claim is narrowed during prosecution in order to meet requirements for patentability. As the Federal Circuit stated in *Sage Products, Inc. v. Devon Industries, Inc.*, 126 F.3d 1420, 1432 (Fed. Cir. 1997), courts have

consistently held that the purpose of estoppel is to insure that the applicant does not "retrade or renege on a deal struck with the PTO during prosecution."

In order to determine whether estoppel is applicable, the Supreme Court established a case-by-case approach, holding that it is necessary to examine the reason for the amendment. *Warner-Jenkinson*, 520 U.S. at 32. In the event that the reason for the amendment is unclear, the Supreme Court stated that a "rebuttable presumption" arises that the amendment was made for reasons of patentability, thereby triggering prosecution history estoppel. *Id.* at 33.

In complete disregard of this Court's decision mandating the use of a case-by-case approach in applying prosecution history estoppel, the Federal Circuit in *Festo* implemented a rigid rule barring the application of the doctrine of equivalents to any claims amended for reasons relating to patentability. Moreover, in this case, the Federal Circuit took *Festo* even further, applying prosecution history estoppel to *all* amendments, regardless of the reason for their adoption. These decisions directly conflict with the rule set forth by this Court in *Warner-Jenkinson* and seriously undermine the protection provided by the doctrine of equivalents. If the decision in this case is allowed to stand, the patent system as a whole may suffer serious consequences. Patentees will retroactively be deprived of their property interests. The costs of patent prosecution and litigation may increase. New innovations may decline.

Accordingly, in light of the conflict between the Federal Circuit's decision in this case and the previous holdings of this Court, as well as the serious threat this decision poses to the existing patent system, review of this Court is necessitated.

I. Certiorari Should Be Granted Because the Federal Circuit's Decision is in Direct Conflict With Decisions of This Court

Following in the footsteps of *Festo*, the Federal Circuit's decision in this case represents a drastic change in federal patent law relating to the doctrine of equivalents and prosecution history estoppel. Applying the holding it reached in the *Festo* case, the court below abandoned the case-by-case approach to applying prosecution history estoppel which was reaffirmed unanimously by this Court in *Warner-Jenkinson*.

As stated above, in *Festo*, the Federal Circuit virtually eliminated the doctrine of equivalents by setting forth a bright-line rule that any amendment that (a) narrows a patent claim and (b) is related to any requirement for patentability results in prosecution history estoppel.

The *Pioneer* decision, however, marks an even further departure from the doctrine of equivalents. The *Pioneer* court held that even an inadvertent amendment to a claim made without any bearing whatsoever on patentability is subject to prosecution history estoppel. The court stated,

> [e]ven if we were to accept Pioneer's explanation for its amendment, inadvertence is not a sufficient reason to overcome the bar of prosecution history estoppel on the facts of this case. The public notice function of patents would be frustrated by forcing a patentee's competitors to guess whether a patent's claims were drafted and accepted in error.

(App. 8a).

Such reasoning, however, was expressly rejected by this Court in *Warner-Jenkinson*. The petitioner in *Warner-Jenkinson* sought rigid application of prosecution history estoppel, under which any amendment, regardless of the reason for its implementation, would bar the doctrine of equivalents. 520 U.S. at 30. The Court rejected petitioner's suggested approach, stating that it went "too far. *Id.* at 32 n.6. The Court held that implementation of such a *per se* rule would be contrary to the long line of cases that have "probed the reasoning behind the Patent Office's insistence upon a change in claims." *Id.* at 31. Following a review of cases that applied prosecution history estoppel, the Court found that estoppel was applied "only where claims have been amended for a limited set of reasons." *Id.* at 32.

The court in *Warner-Jenkinson* explained as follows,

> [P]etitioner reaches too far in arguing that the reason for an amendment during patent prosecution is irrelevant to any subsequent estoppel. In each of our cases cited by petitioner and by the dissent below, prosecution history estoppel was tied to amendments made to avoid the prior art, or otherwise to address a specific concern — such as obviousness — that arguably would have rendered the claimed subject matter unpatentable.

Id. at 48.

Thus the Court reaffirmed the practice of applying prosecution history estoppel on a case-by-case basis. The court stated:

> [t]oday we adhere to the doctrine of equivalents. . . . Prosecution history estoppel continues to be available as a defense to infringement, but if the patent holder demonstrates that an amendment required during prosecution has a purpose unrelated to patentability, a court must consider that purpose in order to decide whether an estoppel is precluded.

Id. at 40-41.

The opinion in this case, applying the seriously flawed *Festo* reasoning, abandons both the spirit and the letter of *Warner-Jenkinson*. As discussed above, *Festo* adopted an inflexible "bright line" test for prosecution history estoppel which is directly in conflict with the *Warner-Jenkinson* case-by-case approach. By applying that holding in this case, the Federal Circuit essentially eliminated the doctrine of equivalents from every conceivable case where ANY change is made to the language of patent claims during the prosecution process.[3]

The Federal Circuit attempted to conceal its latest expansion of the *Festo* doctrine by suggesting in its opinion that the applicant added the word "switching" to avoid prior art when claim 6 was rewritten in independent form as claim 1. (App. 9a-11a). The Court reached this conclusion by completely ignoring both the evidence in the prosecution history, as well as the declaration of the patent attorney who prosecuted the patent for Pioneer.

3. The practical consequences of the Federal Circuit's decision are enormous as "most patents contain claims that were amended during prosecution." *Festo*, 234 F.3d at 598 (Michel, J. dissenting).

The prosecution record indicates that the "switching" limitation was made inadvertently. Claim 7 was amended to depend on claim 1 but also recited that the multiplier "is a switching type." (App. 48a-49a). Thus, the same "switching" limitation was affirmatively recited in both an independent and a dependent claim, indicating an inadvertent drafting error. Furthermore, the addition of the word "switching" to claim 1 was not noted in the applicant's remarks. The applicant simply stated that, "amended claim 1 represents original claim 6 in independent form. . . ." (App. 50a). Thus, the prosecution history supports petitioner's assertion that the claim was made inadvertently.

Moreover, the Beecher declaration is also evidence that the "switching" limitation was made inadvertently. However, instead of permitting Pioneer to rely upon this declaration in order to overcome the rebuttable presumption, the Federal Circuit dismissed the declaration as being outside the public record. (App. 7a). The court thus concluded, without the benefit of any evidentiary support, that the addition of the word "switching" was in response to a patentability concern. (App. 11a).

The decision to reject the declaration of patent attorney Beecher on the issue of inadvertence because it was not part of the prosecution record was a further application of the "Catch 22" approach to the rebuttable presumption that the Federal Circuit announced in *Festo*. As pointed out by Judge Newman in his *Festo* opinion, this interpretation of *Warner-Jenkinson* converts the rebuttable presumption into "an irrebuttable fiat", a result which could not have been intended by the Supreme Court. *Festo*, 234 F.3d at 630 (Newman, J., concurring in part, dissenting in part). In the instant case, the Federal Circuit's refusal to consider the

Beecher declaration greatly limited Pioneer's ability to overcome the rebuttable presumption that the amendment was made for reasons of patentability. Thus Pioneer was unable to avoid the application of prosecution history estoppel. Clearly nothing in the *Warner-Jenkinson* opinion contemplates such an unfair and inequitable result.[4]

In the final analysis, the Federal Circuit displayed its desire to expand *Festo* beyond its original boundaries to deny relief on appeal to Pioneer when it held that "inadvertence is not a sufficient reason to overcome the bar of prosecution history estoppel on the facts of this case." (App. 8a). This is an especially harsh result given that a "sufficient reason" was fully documented to the trial court in the form of the Beecher declaration, as well as the prosecution record. It is a result which cannot be allowed to stand in light of the policies set forth by this court in *Warner-Jenkinson*.

II. Certiorari Should Be Granted Because the Federal Circuit's Decision Will Negatively Impact the Patent System

A. Pioneer Retroactively Weakens the Property Rights of Patent Holders

The expanded doctrine of prosecution history estoppel set forth in *Pioneer* will weaken the rights of existing patentees. Amendments are a prevalent step in the prosecution process. As Judge Newman observed, a mere

4. On remand, the Federal Circuit in *Warner-Jenkinson* stated that, "[w]here the prosecution history is silent or unclear the district court should give a patentee the opportunity to establish the reason, if any, for a claim change." *Hilton Davis Chemical Co. v. Warner-Jenkinson Co.*, 114 F.3d 1161, 1163 (Fed. Cir. 1997).

ten to fifteen percent of simple patents make it through the process without amendments, while the number of complex applications that escape amendment is "vanishingly small." *Festo*, 234 F.3d at 638 n.21 (Newman, J., concurring in part, dissenting in part).

By expanding the types of claim amendments that trigger prosecution history estoppel even beyond those set forth in *Festo*, the *Pioneer* court has virtually eliminated the doctrine of equivalents as a means of protecting patentees from copyists. As a consequence, the rights of existing patentees in amended claims will be a "hollow and useless thing." *Graver Tank*, 339 U.S. at 607. This decision places most patentees in jeopardy of retroactively losing the value of their intellectual property.

B. Pioneer Encourages Copying Thereby Minimizing the Value of Patents

The bright-line rule set forth in *Festo* and expanded upon in *Pioneer* will provide a windfall to the competitors of existing patentees. By simply reviewing a patent's prosecution history, competitors will be able to determine the claim elements for which there will be no range of equivalents. A competitor can make an insubstantial change to an element and so long as the element has been amended for any reason, the competitor will not be liable for infringement. *Festo*, 234 F.3d at 616 (Michel, J., concurring in part, dissenting in part) (*Festo* "provides copyists a fail-safe method to avoid liability for infringement").

This Court appreciates the disruptive nature of such a change in the patent law. In *Warner-Jenkinson*, this Court stated that, "to change so substantially the rules of the game

now could very well subvert the various balances the PTO sought to strike when issuing the numerous patents which have not yet expired and which would be affected by our decision." *Warner-Jenkinson*, 520 U.S. at 32 n.6. Yet this is the practical effect of allowing decisions such as *Festo* and *Pioneer* to stand. In exchange for the "predictability" and "certainty" which the *en banc* majority found so valuable in *Festo* is the impact of these decisions on innovation. *Festo*, 234 F.3d at 578. Clearly these decisions limit the value of issued patents in a manner not previously contemplated by the patentees. Moreover, all future patentees will be less inclined to seek patents if the rights applicable to patent ownership continue to be limited. It is beyond logic to assume that decisions which narrow the rights of patent ownership will not lead to less innovation and greater copying. Such is the unfortunate legacy of *Festo* and its progeny such as *Pioneer*. Only by accepting certiorari in these cases can the process of returning rights to patent owners begin in earnest.

CONCLUSION

For the reasons set forth above, Pioneer respectfully requests that the Court issue a Writ of Certiorari to review the judgment of the Court of Appeals for the Federal Circuit.

Respectfully submitted,

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APPENDIX

APPENDIX A — OPINION OF THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT DATED AND DECIDED JANUARY 23, 2001

UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

00-1012

PIONEER MAGNETICS, INC.,

Plaintiff-Appellant,

v.

MICRO LINEAR CORPORATION,

Defendant-Appellee.

DECIDED: January 23, 2001

Before MAYER, *Chief Judge*, NEWMAN and LOURIE, *Circuit Judges*.

MAYER, *Chief Judge*.

Pioneer Magnetics, Inc. (Pioneer) appeals the judgment of the United States District Court for the Central District of California, case number 95-CV-8307, granting Micro Linear Corporation (Micro Linear) summary judgment that none of its accused products infringe Pioneer's United States Patent No. 4,677,366 (the '366 patent). Because the parties do not contest the judgment of literal infringement and the district

court properly concluded that prosecution history estoppel precludes infringement under the doctrine of equivalents, we affirm.

Background

Pioneer owns the '366 patent directed toward a "unity power factor power supply." The patent describes circuitry designed to receive variant levels of input voltage and to emit a constant output voltage, thereby providing a steady electrical current source to another circuit.

The '366 patent consists of four claims: independent claim 1, and dependent claims 2-4. Claim 1 recites in relevant part: "In a switched power supply: a rectifier adapted to be connected to the alternating current line; a boost converter connected to the output of said rectifier . . . ; and a control circuit . . . , said control circuit including a voltage error amplifier . . . , a *switching analog multiplier circuit* . . . , a current regulator amplifier . . . , and circuit means including a pulse-width modulator . . . ." '366 patent, col. 6, ll. 7-38 (emphasis added). Claim 2, also relevant to the prosecution history of the '366 patent, recites: "The combination defined in claim 1, in which said multiplier is a switching type, and in which said control circuit includes a timer and ramp signal generator for supplying clock signals to said switching multiplier and ramp signals to said pulse width modulator." *Id.*, at col. 6, ll. 39-43.

Pioneer's patent attorney, Keith Beecher, filed the application that matured into the '366 patent on May 12, 1986. The application included nine claims: claim 1 (the only

independent claim) and claims 2-9. Four of these original claims are relevant to the issue at hand:

> 4. The combination defined in claim 3, in which said control circuit *includes a multiplier* . . .
>
> 5. The combination defined in claim 4, and which includes . . . *circuit means* . . .
>
> 6. The combination defined in claim 5, in which said last-named *circuit means includes a pulse width modulator.*
>
> 7. The combination defined in claim 6, in which said *multiplier is a switching type*, and in which said control circuit includes a timer and ramp signal generator for supplying clock signals to said switching multiplier and ramp signals to said pulse width modulator.

(emphasis added).

The examiner rejected original claims 1-5 and 8-9 under 35 U.S.C. § 102(b) as anticipated by United States Patent No. 4,437,146 (the Carpenter reference). This reference did not disclose a switching multiplier circuit or a pulse-width modulator. The examiner then rejected original claim 6 as indefinite under 35 U.S.C. § 112, second paragraph, stating that "[t]he phrase 'said last-named circuit means' lacks proper antecedent basis in the claims." Claim 7 was dependent upon claim 6, and therefore was rejected on the same basis.

Appendix A

Pioneer did not dispute the rejection. Instead, it amended original claims 1 and 7, and cancelled original claims 2-6. The amendments to claim 1 imported claims 2-6, and had the relevant substantive effect of changing "circuit means" in original claim 5 to "circuit means including a pulse-width modulator" and changing the "multiplier" in original claim 4 to a "switching analog" multiplier circuit. In the remarks section of its amended application, Pioneer explained,

> It is believed clear that there is no showing in the cited Carpenter Patent 4,437,146 of the specific combination set forth in amended claim 1. It is also noted that amended claim 1 represents original claim 6 in independent form, and that claim 6 has been amended to overcome the objection raised under 35 USC § 112.

Despite twice stating that amended claim 1 incorporated original claims 2-6, Pioneer offered no explanation for its addition of the "switching analog" limitation not present in original claims 1-6.

As it stated in its remarks, Pioneer also amended original claim 7 (issued as final claim 2) to depend on amended claim 1, and to specify that the switching multiplier recited in claim 7 be a "pulse-width" type. On January 21, 1987, the examiner held a telephone interview with Beecher to propose an amendment deleting this "pulse-width" limitation. With this additional amendment, the examiner allowed the claims. The patent issued on June 30, 1987.

More than eight years later, on December 14, 1995, Pioneer filed suit against Micro Linear alleging infringement

of the '366 patent. In motions seeking interpretation of the claims, the parties requested the court to identify what equivalents of the "switching multiplier" limitation, if any, are barred by prosecution history estoppel. In support of its motion, Pioneer offered a declaration by Beecher that the reason he added the "switching" limitation to claim 1 was inadvertence. The court concluded that a "non-switching multiplier" is outside the permissible range of equivalents of this limitation because Pioneer narrowed claim 1 by adding limitations, including the "switching" limitation, to meet the objections of the Patent and Trademark Office as to the patentability of the claim in light of prior art. In response to this ruling, the parties stipulated that summary judgment of non- infringement be deemed granted to Micro Linear on the grounds that its accused products do not literally infringe any of the claims of the '366 patent, and that prosecution history estoppel bars Pioneer from asserting under the doctrine of equivalents that the accused products infringe claims containing the "switching analog multiplier circuit" limitation. The district court approved the stipulation and entered a final judgment of non-infringement.

Discussion

We review a district court's grant of summary judgment *de novo*. *See Vanmoor v. Wal-Mart Stores, Inc.*, 201 F.3d 1363, 1365, 53 USPQ2d 1377, 1378 (Fed. Cir. 2000) (citing *Petrolite Corp. v. Baker Hughes Inc.*, 96 F.3d 1423, 1425, 40 USPQ2d 1201, 1203 (Fed. Cir. 1996)). Prosecution history estoppel is a legal question subject to our *de novo* review. *Cybor Corp. v. FAS Techs., Inc.*, 138 F.3d 1448, 1459-60, 46 USPQ2d 1169, 1177-78 (Fed. Cir. 1998) (en banc) (citations omitted).

Appendix A

An accused device that does not literally infringe a claim may still infringe under the doctrine of equivalents if each limitation of the claim is met in the accused device either literally or equivalently. *See Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 520 U.S. 17, 40, 41 USPQ2d 1865, 1875 (1997). Prosecution history estoppel serves to limit the doctrine of equivalents by denying equivalency to a claim limitation whose scope was narrowed during prosecution for reasons related to patentability.

To decide whether a claim amendment gives rise to prosecution history estoppel, a court first must determine what claim limitations are alleged to be met by equivalents, and whether a patentee's amendment narrowed the literal scope of the claim. *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., Ltd.*, 234 F.3d 558, 586, 56 USPQ2d 1865, 1886 (Fed. Cir. 2000) (en banc). Here, there is no dispute that Pioneer alleges that the "switching analog multiplier circuit" can be met by an equivalent, and that its amendment of claim 1 from a "multiplier" to a "switching analog" multiplier narrowed the literal scope of the claim.

A court next must examine the reason why an applicant amended a claim. *See Warner-Jenkinson*, 520 U.S. at 32-33, 41 USPQ2d at 1872-73; *Festo*, 234 F.3d at 565, 586, 56 USPQ2d at 1869-70, 1886. The burden is on the patent holder to establish that the reason for the amendment is not one related to patentability. *Warner-Jenkinson*, 520 U.S. at 33, 41 USPQ2d at 1873; *Festo*, 234 F.3d at 586, 56 USPQ2d at 1886. If the reason for the amendment is shown by the prosecution record to be unrelated to patentability, then "a court must consider that purpose in order to decide whether

an estoppel is precluded." *Warner-Jenkinson*, 520 U.S. at 40-41, 41 USPQ2d at 1876, *Festo*, 234 F.3d at 566, 56 USPQ2d at 1870. If the reason for the amendment is related to patentability, no equivalency is available as to the subject matter of the amendment. *See Warner-Jenkinson*, 520 U.S. at 33, 41 USPQ2d at 1873; *Festo*, 234 F.3d at 565-66, 569, 585, 56 USPQ2d at 1870, 1872, 1886. Where no explanation is established, a court should presume that the applicant had a substantial reason related to patentability for the amendment. *Id.* Prosecution history estoppel then bars the application of the doctrine of equivalents as to that limitation. *Id.*

We therefore examine the reason offered for the amendment. Pioneer contends it added the "switching" limitation through sheer inadvertence, unmotivated by any of the statutory requirements for a patent. To argue that its addition of the "switching" limitation was obviously in error, it relies on (1) the Beecher declaration, (2) the portion of its patent application stating that amended claim 1 incorporated claims 2-6 (which did not include the switching limitation), and (3) its assertion that reading amended claim 1 to include the "switching" limitation would be redundant of amended claim 2.

The argument is unpersuasive. First, we do not consider the Beecher declaration in determining the reason for the amendment to the claim. Only the "public record of the patent's prosecution, i.e., the patent's prosecution history" can be a basis for such a reason. *Festo*, 234 F.3d at 586, 56 USPQ2d at 1886. Second, the prosecution history does not show that the reason for the amendment of the term

"switching" was inadvertent. Although the Remarks section of the amendments indicates that Pioneer amended claim 1 to state claim 6 in independent form, it is equally possible that Pioneer changed the claim intentionally but inadvertently failed to update the Remarks. Finally, claim 2 is not redundant of claim 1 because it includes the additional limitations of a "timer and ramp signal generator . . . ." '366 patent, col. 6, ll. 41-43.

Even if we were to accept Pioneer's explanation for its amendment, inadvertence is not a sufficient reason to overcome the bar of prosecution history estoppel on the facts of this case. The public notice function of patents would be frustrated by forcing a patentee's competitors to guess whether a patent's claims were drafted and accepted in error. *See Festo*, 234 F.3d at 576-77, 56 USPQ2d at 1878 (emphasizing the definitional and public notice functions of patent claims and the reluctance to entertain speculative inquiries in areas of prosecution history estoppel). A patent applicant has many opportunities to remedy a drafting error in his claims. He may amend the claim during examination. *See Solomon v. Kimberly-Clark Corp.*, 216 F.3d 1372, 1378, 55 USPQ2d 1279, 1282 (Fed. Cir. 2000) (citations omitted) ("[D]uring patent prosecution when claims can be amended, ambiguities should be recognized, scope and breadth of language explored, and clarification imposed. . . . An essential purpose of patent examination is to fashion claims that are precise, clear, correct, and unambiguous. Only in this way can uncertainties of claim scope be removed, as much as possible, during the administrative process."). A patentee may also seek a reissue broadening the claim within the two years provided by 35 U.S.C. § 251 (1994).

Pioneer further argues that its amendment adding the "switching" limitation to claim 1 was not related to patentability because it was voluntary and was not offered to overcome any rejection, on prior art or otherwise. However, as *Festo* makes clear, the mere fact that an amendment is voluntary does not shield it from prosecution history estoppel. "Voluntary claim amendments are treated the same as other amendments. Therefore, a voluntary amendment that narrows the scope of a claim for a reason related to the statutory requirements for a patent will give rise to prosecution history estoppel as to the amended claim element." *Festo*, 234 F.3d at 568, 56 USPQ2d at 1871.

We therefore conclude that Pioneer has failed to meet its burden of establishing a reason unrelated to patentability for its amendment. Our own examination of the prosecution history convinces us that the amendment was made to avoid prior art, the classic basis for the application of prosecution history estoppel. *See Warner-Jenkinson*, 520 U.S. at 30-31; *see also Sextant Avionique, S.A. v. Analog Devices, Inc.*, 172 F.3d 817, 826, 49 USPQ2d 1865, 1871 (Fed. Cir. 1999) (citing *Bai v. L & L Wings, Inc.*, 160 F.3d 1350, 1355, 48 USPQ2d 1674, 1677 (Fed. Cir. 1998)) (substantive changes to a claim that clearly respond to an examiner's rejection of that claim as unpatentable over prior art give rise to prosecution history estoppel).

The prosecution history shows that the examiner rejected claims 1-5 and 8-9 in light of the Carpenter reference, which disclosed a power supply containing a non-switching multiplier. Pioneer amended claim 1 to include a switching analog multiplier, which distinguished the '366 invention

over Carpenter. Therefore, the addition of this limitation was made to avoid prior art.

Pioneer attempts to avoid this conclusion by arguing that the "switching" limitation was unnecessary to the allowance of the claim. It contends that it added the pulse-width modulator, not the "switching" limitation, to distinguish its invention over Carpenter. According to Pioneer, the prosecution history indicates that amended claim 1 would have been allowed without the "switching" limitation because the examiner did not state in his initial rejection that he was rejecting original claim 6 (containing the pulse-width modulator limitation, but not the "switching" limitation) in view of prior art, but only for an improper antecedent basis reference under section 112, second paragraph.

We will not speculate whether any given amendment was material to the prosecution of the patent. *Festo*, 234 F.3d at 576-77, 56 USPQ2d at 1879 (citing *Hubbell v. United States*, 179 U.S. 77, 84 (1900)). Claim 1 is a combination claim. Its patentability rests on the novelty of the recited combination in amended claim 1, which includes the switching multiplier. *See id.* at 590-91, 56 USPQ2d at 1889-90. Moreover, the prosecution history shows that Pioneer recognized that the combination of elements was important to the allowance of the claims. In its remarks to the PTO, Pioneer stated, "[i]t is believed clear that there is no showing in the cited Carpenter Patent 4,437,146 of the *specific combination* set forth in amended claim 1." (emphasis added). It also stated that "[t]he amended claim 1 recites in precise details the various elements and components of the

overall *combination* of the invention . . . ." (emphasis added). Although it is not clear from the prosecution history whether the addition of the pulse-width modulator alone would suffice to overcome the Carpenter reference, the addition of the "switching" limitation is responsive to the examiner's anticipation rejection and assisted Pioneer in distinguishing its invention over prior art. *See Bai*, 160 F.3d at 1356, 48 USPQ2d at 1678-79 (refusing to speculate whether the examiner would have allowed a claim without the additional limitation where the limitation distinguished the invention over prior art). The prosecution history therefore demonstrates that the amendment was made for a reason related to patentability, to avoid prior art.

No scope of equivalents can be given to a claim limitation that was narrowed because of patentability concerns. *Festo*, 234 F.3d at 574, 56 USPQ2d at 1877. Therefore, Pioneer is estopped from arguing equivalents to the "switching analog multiplier circuit" limitation of the claims in the '366 patent. As the parties have recognized, the determination of these issues is dispositive. It is therefore unnecessary to reach the remainder of the issues briefed by the parties.

Conclusion

Accordingly, the judgment of the United States District Court for the Central District of California is affirmed.

AFFIRMED

APPENDIX B — STIPULATION FOR ENTRY OF ORDER GRANTING SUMMARY JUDGMENT OF NON-INFRINGEMENT; ORDER THEREON OF THE UNITED STATES DISTRICT COURT FOR THE CENTRAL DISTRICT OF CALIFORNIA, WESTERN DIVISION DATED AND FILED SEPTEMBER 2, 1999 AND ENTERED SEPTEMBER 7, 1999

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Appendix B

UNITED STATES DISTRICT COURT
CENTRAL DISTRICT OF CALIFORNIA
WESTERN DIVISION

Case No. CV 95-8307 LGB(BQRx)

PIONEER MAGNETICS, INC.,
a California corporation,

Plaintiff,

v.

MICRO LINEAR CORPORATION, a Delaware corporation; and DOES 1-10, inclusive,

Defendants.

STIPULATION FOR ENTRY OF ORDER GRANTING SUMMARY JUDGMENT OF NON-INFRINGEMENT; ORDER THEREON

This is a lawsuit for the alleged infringement of U.S. Patent No. 4,677,366 (the '366 patent). It includes a counterclaim for a declaratory judgment of non-infringement and invalidity of the '366 patent.

The '366 patent has four claims. Independent claim 1 recites, inter alia, a "switching analog multiplier circuit." Claims 2 – 4 depend upon Claim 1 and thus also require a "switching analog multiplier circuit."

Appendix B

Defendant contends that the accused products do not literally infringe the "switching analog multiplier circuit" element and that Plaintiff is barred from arguing infringement under the "doctrine of equivalents" because of the doctrine of "file wrapper estoppel." The Court in its order filed on November 12, 1998 concluded:

> "(1) the plain language of the patent and its prosecution history require that Claim One contains the limiting effect of the modifier 'switching'; (2) therefore the doctrine of file wrapper estoppel precludes the finding that a 'non-switching' multiplier is equivalent to a 'switching' multiplier." *Interpretation of U.S. Patent 4,677,366* at 29:3 – 29:9.

Pursuant to Local Rule 7.4.1, Defendant notified Plaintiff that Defendant intends to file a motion for summary judgment that none of the accused products literally infringe the "switching analog multiplier circuit" and Pioneer is barred by the Court's ruling from arguing that any of the accused devices infringe the '366 patent under the doctrine of equivalents for this element. As a consequence of the Court's ruling, Defendant asserts that it is entitled to summary judgment as a matter of law.

Plaintiff is willing to stipulate that such a motion be deemed to have been brought and granted, on condition that Defendant dismiss its counterclaim, that Plaintiff's right to appeal on all issues other than non-literal infringement of this claim element be preserved, and that an appealable judgment is entered forthwith.

Appendix B

NOW, THEREFORE, the parties stipulate as follows:

1. Defendant be deemed to have filed a motion for summary judgment of non-infringement and that this motion be deemed to have been granted on the ground that the accused products do not literally infringe the "switching analog multiplier circuit" element and on the already-determined ground that Plaintiff is barred by the doctrine of file wrapper estoppel from asserting infringement of this element under the doctrine of equivalents.

2. Plaintiff's right to appeal all issues in this case is preserved including, without limitation, all claim construction and file wrapper estoppel determinations made by the Court. Notwithstanding, Plaintiff shall not have the right to appeal the unopposed determination that the accused products do not literally infringe the "switching analog multiplier circuit" element.

3. Defendant's counterclaim is dismissed upon approval of this stipulation by the Court, but shall be reinstated automatically if the Court of Appeals substantially modifies the Court's ruling regarding the interpretation of the "switching analog multiplier" element, or the applicability of the doctrine of file wrapper estoppel to that element.

4. An appealable judgment of non-infringement in favor of defendant shall be entered forthwith.

Appendix B

IT IS SO STIPULATED.

Dated: Sept. 1, 1999

s/ [illegible]
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Dated: August 31, 1999

s/ Vera M. Elson
Michael A. Ladra
Vera M. Elson
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Attorneys for Defendant
MICRO LINEAR CORPORATION

Appendix B

ORDER

IT IS SO ORDERED.

Dated: September 2, 1999

s/ Lourdes G. Baird
Judge, United States District Court

APPENDIX C — FINAL JUDGMENT OF THE UNITED STATES DISTRICT COURT FOR THE CENTRAL DISTRICT OF CALIFORNIA, WESTERN DIVISION DATED AND FILED OCTOBER 21, 1999 AND ENTERED OCTOBER 25, 1999

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THE UNITED STATES DISTRICT COURT
CENTRAL DISTRICT OF CALIFORNIA
WESTERN DIVISION

Case No. CV 95-8307 LGB(BQRx)

Pioneer Magnetics, Inc., a California corporation,

Plaintiff,

v.

Micro Linear Corporation, a Delaware corporation; and DOES 1-10, inclusive,

Defendants.

Appendix C

FINAL JUDGMENT

Pursuant to the Stipulation for Entry of Order Granting Summary Judgment of Non-Infringement; Order Thereon (filed Sept. 2, 1999) and the Court's order approving this stipulation (set forth at the end of the stipulation) (entered Sept. 7, 1999), the Court hereby enters an appealable judgment of non-infringement in favor of defendant Micro Linear Corporation.

Dated: 10/21/99

s/ Lourdes G. Baird
United States District Court Judge

APPENDIX D — INTERPRETATION OF THE UNITED STATES DISTRICT COURT FOR THE CENTRAL DISTRICT OF CALIFORNIA OF U.S. PATENT 4,677,366 DATED AND FILED JULY 19, 1999

UNITED STATES DISTRICT COURT
CENTRAL DISTRICT OF CALIFORNIA

Case No. CV 95-8307 LGB (Ex)

PIONEER MAGNETICS, INC.,
a California corporation,

Plaintiff,

v.

MICRO LINEAR CORPORATION,
a Delaware corporation,

Defendant.

AND RELATED COUNTERCLAIMS.

INTERPRETATION OF U.S. PATENT 4,677,366.

I. INTRODUCTION.

This litigation arises out of the alleged infringement of a power supply circuitry patent, identified as United States Patent 4,677,366 (" '366"). Currently before the court is plaintiff's *Markman* motion requesting interpretation of the patent. The Court interprets the patent as described below.

Appendix D

II. FACTUAL AND PROCEDURAL BACKGROUND.

A. DESCRIPTION OF THE PATENTED INVENTION.

The patent at issue describes circuitry that intakes electrical currents at variant voltage levels and emits a power supply with a constant current voltage. This is not the first patented invention capable of transforming a current with variant voltage into a constant power supply, but it is distinguishable from prior art because it includes a "boost converter," which provides for a more reliable and consistent output voltage. '366 Patent, col. 1, lns. 5-68.

B. PROCEDURAL HISTORY.

On December 14, 1995, plaintiff Pioneer Magnetics filed a complaint against Micro Linear for patent infringement. The complaint asks for relief from the alleged infringement of United States Patent '366 by defendant's use, sale, and manufacture of "unity power factor" power supplies. On February 14, 1996, defendant answered the complaint, asserting several affirmative defenses, and a counterclaim for declaratory relief. Plaintiff answered the counterclaim with several affirmative defenses on March 7, 1996.

Between October 1996 and May 1998, the parties filed several motions for summary judgment involving the asserted affirmative defenses. Denying all motions but one, the Court granted defendant's motion for summary adjudication as to all claims by plaintiff based on infringing activities that occurred before December 14, 1989.

Appendix D

On November 12, 1998, the court issued an order interpreting two terms in the '366 patent. It interpreted Claim One's "switching analog multiplier circuit" as follows: (1) the plain language of the patent and its prosecution history require that Claim One contain the limiting effect of the modifier "switching"; (2) the doctrine of file wrapper estoppel precludes the finding that a "non-switching multiplier" is equivalent to a "switching multiplier"; and (3) the phrase does not constitute means-plus-function language. The Court also interpreted Claim One's "circuit means" to constitute means-plus-function language. Currently before the Court is a second *Markman* motion, which requests further interpretation of the patent.

C. LANGUAGE OF THE PATENT.

United States Patent '366 describes four claims, one of which is independent and three of which are dependent. The parties only dispute terms in Claim One. The terms that are interpreted in this order are underlined.

> 1. In a switch power supply: a rectifier adapted to be connected to the *alternating current line*; a boost converter connected to the output of said rectifier, said converter including an input circuit having a series-connected inductance coil and an output circuit having a shunt-connected storage capacitor, and further including a power switch connected between the inductance coil and the storage capacitor; and a *control circuit* connected to said power switch for providing a switching control signal for said converter having a current

reference which tracks the waveform of the *alternating current line* voltage to cause the power supply to exhibit *unity power factor* to the *alternating current line*, said *control circuit* including a voltage error amplifier connected to the output of said converter and to a source of *reference voltage* for producing an output which is a *function* of the difference between the output voltage of the converter and the *reference voltage* from the source, a switching analog multiplier circuit connected to the output of said voltage error amplifier and to the output of said rectifier to produce an output which is *proportional* to the output of said voltage error amplifier multiplied by the instantaneous line voltage and divided by the RMS line voltage squared, a current regulator amplifier connected to the converter and to the multiplier and *responsive* to a voltage representing the current flow in the converter and to the output of the multiplier for producing a current error signal, and circuit means including a pulse-width modulator connected to said current regulator amplifier and responsive to said current error signal therefrom for introducing said switching control signal to said power switch.

'366 Patent, col. 6, lns. 7-47 (emphasis added).

Appendix D

III. INTERPRETATION OF PATENT '366.

A. LEGAL STANDARD FOR PATENT INTERPRETATION.

In *Markman v. Westview Instruments, Inc.*, 517 U.S. 370 (1996), the Supreme Court held that the interpretation of a patent claim — the portion of the patent document that defines the scope of the patentee's rights — is a matter of law exclusively within the province of the court and is not a factual question for the jury. *See id.* at 372. The *Markman* decision suggested that a trial court could consider various types of evidence when interpreting a patent, including expert testimony. *See id.* at 388-90. Shortly after the Supreme Court handed down *Markman*, the Federal Circuit, in *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576 (Fed. Cir. 1996), expanded on the court's dicta concerning evidence available to a trial court in interpreting patent claims. *See id.* at 1581-83. The Federal Circuit hold that if intrinsic evidence can, by itself, resolve ambiguity in a patent term, then a court may not rely on extrinsic evidence, such as expert testimony, to construe the term. *See id.* at 1583. A trial court may only use extrinsic evidence when intrinsic evidence fails to illuminate the meaning of the disputed claim. *See id.* Moreover, extrinsic evidence cannot broaden the reach of a claim or contradict explicit language. *See id.*

The Federal Circuit detailed a hierarchy of specific types of evidence that a court may consider. When interpreting a patent, a trial court must first look at the language of the claim itself. *See id.* at 1582. Court should typically construe terms by their common, customary meaning, but a patentee

is allowed to define her own terms in the specification section of the patent or in the prosecution history. *See id.* Therefore, courts must always review the specification, which, when setting forth an embodiment of the invention, frequently provides explicit definitions of the claim terms. *See id.* The language in the specification is dispositive, and "it is the single best guide to the meaning of the dispute term." *Id.* In addition, a court may consider the prosecution history of the patent as evidence of term meaning. *See id.* This history contains the complete record of all the filings and examinations before the Patent and Trademark Office, including representations made by the applicant regarding the significance of claims and terms. *See id.* The history also limits the interpretation of terms by recording the exclusion of any term definition disclaimed during the prosecution. *See id.*

Only when intrinsic evidence fails to resolve ambiguity in a disputed claim term may a court rely on extrinsic evidence. *See id.* at 1583. The policy rationale supporting this evidentiary limitation is that prospective patentees must have access to public records concerning the patent to "design around" a prior art. *Id.* If expert testimony or other extrinsic evidence were permitted to alter the record, then this public benefit would be frustrated. *See id.* Accordingly, a court can only examine extrinsic evidence if the evidence does not contradict the claim language, the specification, or the prosecution history but instead supplements it. *See id.* at 1584-85.

Appendix D

B. DISPUTED TERMS.

1. "Alternating Current Line."

The parties dispute the meaning of the term "alternating current line." Claim One uses the term three times:

> In a switch power supply: a rectifier adapted to be connected to the *alternating current line*; . . . and a control circuit connected to said power switch for providing a switching control signal for said converter having a current reference which tracks the waveform of the *alternating current line* voltage to cause the power supply to exhibit unity power factor to the *alternating current line* . . . .

'366 Patent, col. 6, lns. 7-8, 14-19 (emphasis added).

The parties dispute whether the alternating current line carries a "current" or a "voltage." The *Webster's II: New Riverside University Dictionary* defines "current" as "a flow of electric charge" or "[t]he amount of electric charge flowing past a specified circuit point per unit time." *Webster's II: New Riverside University Dictionary* 337 (1988). It defines "voltage" as an "[e]lectromotive force or potential difference." *Webster's II: New Riverside University Dictionary* 1294 (1988). Both parties analogize a "current" to water flow and "voltage" to water pressure, which the foregoing dictionary definitions support. (Motion, 1:9-20; Opposition, 1:15-16).

Appendix D

Plaintiff argues that a line cannot carry a voltage because that would be analogous to stating that a "hose carries a pressure." (Motion, 1:13-18). Indeed, in its opposition, defendant concedes that the dispute is merely a semantic distinction and it agrees that a line carries "a current at a given voltage." (Opposition, 1:11-18). Because no real dispute exists between the parties concerning whether the line carries a current or a voltage, the Court interprets the alternating current line as carrying a current at a given voltage.

The parties also dispute whether the alternating current line carries currents only displaying sinusoidal waveforms or sinusoidal and other types of waveforms. Under *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576 (Fed. Cir. 1996), a court must first examine the language of the patent to determine the common, customary meaning of the term in dispute. *See id.* at 1582. Here, the patent does not explicitly define the term "alternating current line" or explain the types of waveforms that the line carries. Moreover, the specification does not define "alternating current line" or address waveforms. *See id.* (a court may examine the specification for a definition if the patent claims do not provide one).

Because the patent and its specification do not contain an explicit definition of "alternating current line," the Court finds that the patentee intended the term to carry its customary usage. The *Encyclopedia of Electronics*, which was published just one year before the filing of the patent application, defines the "square waveform" as a "special form of alternating current." *Encyclopedia of Electronics* 786

(1985). Similarly, the *Illustrated Dictionary of Electronics* defines the "square and sawtooth waveforms" as alternating currents. *See Illustrated Dictionary of Electronics* 598, 638 (1997). Therefore, the common and customary definition of "alternating current line" includes currents not limited to the sinusoidal waveform. Accordingly, the Court interprets the term to include currents not limited to the sinusoidal waveform.

2. "Control Circuit."

The parties also disagree over the function of the "control circuit." Claim One of the patent states that the invention includes "a *control circuit* connected to said power switch for providing a switching control signal." '366 Patent, col. 6, lns. 13-16 (emphasis added). Specifically, the parties dispute whether, (1) the control circuit must deliver an "output" signal; (2) whether the control circuit must deliver the output to the power switch; and (3) whether "V_{gate}" is an example of such an output signal.[1]

The plain language of the clause at issue provides that the control circuit is connected to the power switch for the purpose of emitting a signal to it. The word "providing" in Claim One clearly demonstrates that the control circuit delivers an output to the power switch. This interpretation is supported by the specification's embodiment of the

1. Neither plaintiff or defendant provide a definition for the word "output." The *Webster II: New Riverside University Dictionary* defines an "output" as "[t]he power, energy, or work produced by a system." *Webster II: New Riverside University Dictionary* 835 (1985).

invention, which describes Figure Four as "a block diagram of the control circuit which supplies the signal V_{gate} to FET 50." '366 Patent, Col. 2, lns. 66-67. The specification defines "V_{gate}" as a control signal and "FET 50" as a power switch. '366 Patent, col. 2. lns. 47-48, 50-51. The plain meaning of this embodiment language is that the control circuit delivers an output signal to the power switch. Therefore, given Claim One's and the specification's unambiguous language, the Court interprets the patent to require the control circuit to deliver an output signal to the power switch.

The parties also dispute whether "V_{gate}" is an example of such an output signal. The symbol "V_{gate}" does not appear anywhere in the claim language but only in the specification's embodiment. United States Code, Title 35, Section 112 explains the significance of specification language. It states that the, "specification shall contain a written description of the invention, and of the manner and process of making or using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same. . . ." 35 U.S.C. § 112. Stated in other terms, the specification must include a detailed embodiment of how to implement the patent claims. Therefore, when '366's embodiment references "V_{gate}," it does so in the context of communicating one example of implementing the patent claims.

Turning to the specific use of "V_{gate}," the embodiment states that the "control circuit . . . supplies the signal V_{gate} to FET 50." '366 Patent, col. 2, lns. 66-67. The embodiment defines "V_{gate}" as a control signal and "FET 50" as a power

switch. '366 Patent, col. 2, lns. 47-48, 50-51. Therefore, the embodiment is unambiguous that "V_{gate}" is an example of an output signal from the control circuit to the power switch.

3. "Unity Power Factor."

In its opening papers, plaintiff argues that (1) the "unity power factor" must occur at the alternating current line, rather than the rectified line, and (2) the patent requires that the "unity power factor" only be "substantially" performed. In its opposition, defendant concedes the first point. (Opposition, 3:17-28). However, it argues that the Court cannot adopt the "substantially" performed language because "the term 'substantially' is a term of art suggestive of a broader range of equivalents than the range permitted under the Doctrine of Equivalents." (Opposition, 3:27-28). Instead, it argues that the Court should adopt an interpretation that the unity power factor "need not be precisely performed." Defendant provides no authority for its position that the word "substantially" implicates the Doctrine of Equivalents.

The Court finds that the parties are not substantively in disagreement over the "unity power factor" term. Therefore, it interprets Claim One as requiring that the unity power factor be "essentially" performed.

4. The Voltage Error Amplifier's Output Function.

The parties dispute how to calculate the voltage error amplifier's output voltage. This dispute requires the Court to interpret Claim One's "function" language: Claim One provides for a control circuit that includes,

> a voltage error amplifier connected to the output of said [boost] converter and to a source of reference voltage for producing an output which is a *function* of the difference between the output voltage of the converter and the reference voltage from the source, a switching analog multiplier circuit connected to the output of said voltage error amplifier and to the output of said rectifier to produce an output which is proportional to the output of said voltage error amplifier multiplied by the instantaneous line voltage and divided by the RMS line voltage squared. . . .

'366 Patent, col. 6, lns. 20-30 (emphasis added). The parties specifically dispute whether the output produced by the amplifier is a "proportional function" of the difference between the boost converter's output voltage and the source voltage, or whether it is a "proportional or some other type of function" of the aforementioned difference.

Claim One uses the word "function" without modification: The voltage error amplifier "produc[es] an output which is a function of the difference between the output voltage of the converter and the reference voltage from the source." '366 Patent, col. 6, lns. 20-25. The *Webster's II: New Riverside University Dictionary* defines the mathematical use of the word "function" as: (1) "[a] variable so related to another that for each value assumed by one there is a value determined for the other"; and (2) "[a] rule of correspondence between two sets such that there is a unique element in one set assigned to each element in the other." *Webster's II: New Riverside University Dictionary*

512 (1988). Taking the language of the claim and these definitions together, the plain meaning of the clause provides that the amplifier's output voltage corresponds to the difference between the boost converter output voltage and the source voltage.

This reading of the clause, however, does not resolve the issue posed by the parties. The Court employs a numerical example to illustrate the dispute. Under defendant's reading of the clause, if the output difference is two output units, the "function" requires that the amplifier also produce two output units. Under plaintiff's reading, the function is not limited to proportionality. For example, if the difference is two, and the function is the square of the difference, then the output would be four. Both these scenarios fit within the common definition of "function" because under both of them the output voltage corresponds and depends on the difference between the boost converter output voltage and the source voltage.

Although the clause itself does not explain the scope of the word "function," the clause immediately succeeding it clarifies its meaning. This clause describes the switching analog multiplier as producing "an output which is *proportional* to the output of said voltage error amplifier multiplied by the instantaneous line voltage and divided by the RMS line voltage squared." '366 Patent, col. 6, lns. 25-30 (emphasis added). In this clause, the patentee explicitly stated that the output is proportional. The clear import of the contrasting use of "function" in the preceding clause and "proportional" in this clause is that the patentee intended the voltage error amplifier's output merely to correspond to

an output difference, while he intended the switching analog multiplier's output not only to correspond to an output calculation but also to do so proportionally. If the patentee intended to limit the voltage error amplifier to a proportional function, he could have written in this explicit limitation as he did with the switching analog multiplier. *See Minnesota Mining & Mfg. v. Johnson & Johnson Orthopedics*, 976 F.2d 1559, 1566 (Fed. Cir. 1992) (holding that a court cannot read limitations into a claim that were unintended by the inventor). In short, the Court interprets the voltage error amplifier's output as relying on a function of the difference between other outputs, but the patent does not require the function to be proportional.

5. "Reference Voltage."

The parties dispute whether the reference voltage has a fixed, predetermined value or whether it is an undetermined function of other outputs. Claim One uses the term "reference voltage" twice. The invention contains,

> a control circuit including a voltage error amplifier connected to the output of said converter and to a source of *reference voltage* for producing an output which is a function of the difference between the output voltage of the converter and the *reference voltage* from the source. . . .

'366 Patent, col. 6, lns. 20-25 (emphasis added).

Claim One clearly distinguishes between (1) outputs that depend on functions of other outputs, and (2) outputs that

are independent of other output functions. For example, the voltage error amplifier depends on the difference between the boost convertor output and the reference voltage. Similarly, the switching analog multiplier's output depends on the voltage error amplifier's output multiplied by the instantaneous line voltage and divided by the RMS line voltage squared. In contrast, Claim One merely references a "source of reference voltage." It does not discuss the reference voltage as depending on the function of other outputs but merely references it as an existing voltage. The import of this contrast is that the reference voltage is an input that is independent of other inputs or outputs within the patent. Therefore, the Court interprets the reference voltage as a "fixed" voltage.

6. The Switching Analog Multiplier's Proportional Output.

In its opening papers, plaintiff argues that the switching analog multiplier's output does not have to be exactly proportional to the outputs on which it depends but merely "substantially" proportional. The relevant language in Claim One states that the invention includes a,

> a switching analog multiplier circuit connected to the output of said voltage error amplifier and to the output of said rectifier to produce an output which is *proportional* to the output of said voltage error amplifier multiplied by the instantaneous line voltage and divided by the RMS line voltage squared. . . .

'336 Patent, col. 6, lns. 25-30 (emphasis added). In its opposition, defendant agrees that the proportionality does not have to be exact. (Opposition, 5:10-24). However, defendant objects to the use of the word "substantially" modifying "proportional" because "substantially" is a term of art used in the Doctrine of Equivalents. Defendant provides no authority for this proposition. Because the Court finds that there is no real dispute between the parties, the Court interprets Claim One to require the multiplier to produce an output that is "essentially" proportional to the output of said voltage error amplifier multiplied by the instantaneous line voltage and divided by the RMS line voltage squared.

7. The Conditions Under Which the Patent Must Perform.

Plaintiff alleges that the '366 patent is designed to function optimally with an input voltage of eighty to 270 volts. (Reply. 5:10-14). The parties dispute whether the patent must provide a constant output voltage only if the input voltage falls within the optimal range, or whether it must also emit a constant output voltage when the input voltage falls out of the range.

The patent does not address "normal" or "optimal" operating conditions. In fact, it does not state that the invention operates optimally with an input voltage range of eighty to 270 volts. Similarly, neither the specification or the "background of the invention" section discusses voltage ranges within the which the invention operates.

If the Court were to interpret Claim One to require a "normal" voltage range, the Court would be inserting a

limitation into the patent language. Courts interpreting patent claims may not add extraneous limitations to claim language from extrinsic evidence. *See E. I. Du Pont de Nemours v. Phillips Petroleum*, 849 F.2d 1430, 1433 (Fed. Cir. 1988). The policy rationale supporting this rule is that prospective patentees must have access to public records to "design around" prior art. *See Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1583 (Fed. Cir. 1996). If extrinsic evidence were permitted to alter the record, then public access to the patent's full requirements and limitations would be frustrated. *See id.* Because the instant patent does not discuss "normal" or "abnormal" voltage inputs, the Court declines to read such a limitation into the patent claims. The Court recognizes that the invention, in practice, may operate more efficiently under certain conditions. Nevertheless, the patent's plain language does not require that particular voltage ranges be met to implement the invention. In summary, the Court interprets the patent as not requiring a particular voltage input.

8. The Current Regulator Amplifier's Response to Signals.

The parties dispute how the current regulator amplifier is responsive to other signals within the invention. The pertinent claim language states that the patent includes, "a current regulator amplifier connected to the converter and to the multiplier and *responsive* to a voltage representing the current flow in the converter and to the output of the multiplier for producing a current error signal. . . ." '366 Patent, col. 6, lns. 30-34 (emphasis added). Specifically, the parties dispute whether the response must be "proportional" to the current flow voltage and the multiplier output or

whether the response may be "proportional or some other function" of the voltage and output.

The plain meaning of the clause at issue is that the amplifier reacts to a specified voltage and output to produce a signal. Claim One uses the word "responsive" without modification. Therefore, the patent claims do not require the signal to reflect a set mathematical relation to the specified voltage and output. Moreover, as discussed in the section interpreting the word "function," the patentee used the word "proportional" in other clauses of the patent when he intended an output to relate proportionally to other outputs. If the patentee intended to limit the amplifier's signal to a proportional response, he could have written in this explicit limitation as he did in other areas of the patent. *See Minnesota Mining & Mfg. v. Johnson & Johnson Orthopedics*, 976 F.2d 1559, 1566 (Fed. Cir. 1992). In short, the Court interprets the amplifier's signal as responsive to a specified output and voltage, but the patent does not require that the response be proportional.

IV. CONCLUSION.

The Court INTERPRETS '366 as follows:

1) The alternating current line carries a current at a given voltage. The alternating current line may carry currents that display a waveform other than the sinusoidal waveform.

2) The control circuit delivers an output signal to the power switch. "V_{gate}" is an example of an output signal from the control circuit to the power switch.

3) The "unity power factor" must occur at the alternating current line. The unity power factor only needs to be "essentially" performed.

4) The voltage error amplifier's output relies on a function of the difference between other outputs, but the patent does not require the function to be proportional.

5) The reference voltage is a "fixed" voltage.

6) The switching analog multiplier produces an output that is "essentially" proportional to the output of said voltage error amplifier multiplied by the instantaneous line voltage and divided by the RMS line voltage squared.

7) The patent does not require a particular voltage input.

8) The current regulator amplifier's signal is responsive to a specified output and voltage, but the patent does not require that the response be proportional.

IT IS SO ORDERED.

DATED: July 19, 1999

s/ Lourdes G. Baird
LOURDES G. BAIRD
United States District Judge

APPENDIX E — THE 4,677,366 PATENT

[Omitted here but submitted separately as Lodging]

APPENDIX F — EXCERPTS FROM FILE HISTORY OF U.S. PATENT 4,677,366

We claim:

1. In a switched power supply: a rectifier adapted to be connected to the alternating current line; a converter connected to the output of said rectifier, said converter including an input circuit having a series-connected inductance coil and an output circuit having a shunt-connected storage capacitor, and further including a power switch connected between the inductance coil and the storage capacitor; and a control circuit connected to said power switch for providing a switching control signal for said converter having a current reference tracking the waveform of the alternating current line voltage to cause the power supply to exhibit unity power factor to the alternating current line.

2. The combination defined in claim 1, in which said converter is connected as a boost converter.

3. The combination defined in claim 1, in which said control circuit includes a voltage error amplifier connected to the output of said converter and to a source of reference voltage for producing an output which is a function of the difference between the output voltage of the converter and the reference voltage from the source.

4. The combination defined in claim 3, in which said control circuit includes a multiplier connected to the output of said voltage error amplifier and to the output of said rectifier to produce an output which is proportional to the output of said voltage error amplifier multiplied by the

instantaneous line voltage and divided by the RMS line voltage squared.

5. The combination defined in claim 4, and which includes a current regulator amplifier connected to the converter and to the multiplier and responsive to a voltage representing the current flow in the converter and to the output of the multiplier for producing a current error signal; and circuit means connected to said current regulator amplifier and responsive to said current error signal therefrom for introducing said switching control signal to said power switch.

6. The combination defined in claim 5, in which said last-named circuit means includes a pulse width modulator.

7. The combination defined in claim 6, in which said multiplier is a switching type, and in which said control circuit includes a timer and ramp signal generator for supplying clock signals to said switching multiplier and ramp signals to said pulse width modulator.

8. The combination defined in claim 1, in which said power switch comprises a field effect transistor.

9. The combination defined in claim 1, in which said rectifier comprises a full-wave diode rectifier.

Appendix F

UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office

Address
COMMISSIONER OF PATENTS AND TRADEMARKS
Washington D.C. 20231

SERIAL NUMBER	FILING DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NO.
06/862,593	05/12/86	WILKINSON B	K-30Z0

KEITH D. BEECHER
2001 WILSHIRE BLVD.
SUITE 500
SANTA MONICA, CA 90403

EXAMINER
HOFF-M

ART UNIT
212

PAPER NUMBER
2

DATE MAILED: 09/24/86

This is a communication from the examiner in charge of your application.

COMMISSIONER OF PATENTS
AND TRADEMARKS

Appendix F

☒ This application has been examined.

* * *

A shortened statutory period for response to this action is set to expire 3 month(s) from the date of this letter. Failure to respond within the period for response will cause the application to become abandoned. 35 U.S.C. 133

Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

1. ☒ Notice of References Cited by Examiner, PTO-892.

2. ☒ Notice of Patent Drawing, PTO-948.

* * *

Part II SUMMARY OF ACTION

1. ☒ Claims 1-9 are pending in the application.

* * *

4. ☒ Claims 1-9 are rejected.

* * *

7. ☒ This application has been filed with informal drawings which are acceptable for examination purposes until such time as allowable subject matter is indicated.

* * *

Appendix F

Serial No. 862,593
Art Unit 212

1. Applicant is reminded of the proper language and format of an Abstract of the Disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 250 words. It is important that the abstract not exceed 250 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said", should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

Applicant is required to revise the Abstract to comply with the 50 word minimum, and also to state the technical problem associated with Applicant's invention and his solution to the problem.

2. The disclosure is objected to because of the following informalities:

Page 2, line 11, ";" should be deleted.

Appropriate correction of the disclosure is required.

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3. Claims 6 and 7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The phrase "said last-named circuit means" lacks proper antecedent basis in the claims. Claim 7 incorporates claim 6's language.

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless —
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-5, 8, and 9 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Carpenter.

6. Applicant is required to furnish the Office with a copy of the article by Ned Mohan et al. cited on page 4 of the specification.

7. Applicants' Information Disclosure Statement, since it does not include a copy of the cited patents and a brief explanation of the relevance of each one, is not in compliance with 37 CFR 1.98; therefore, the references have not been considered.

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8. Any inquiry concerning this communication should be directed to Marc S. Hoff at telephone number 703-557-7657.

Hoff/dc MSH

703/557/7657

9/15/86

s/ P. Salce
PATRICK R. SALCE
SUPERVISORY PATENT
EXAMINER
ART UNIT 212

Appendix F

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

ART UNIT 212

In re application of
BRUCE L. WILKINSON et al
Serial No. 862,593
Filed: May 12, 1986
For: UNITY POWER FACTOR POWER SUPPLY
Examiner: M. Hoff

AMENDMENT

Commissioner of Patents and Trademarks
Washington, D. C. 20231

Sir:

Responsive to the Office Action of September 24, 1986, please amend the above-entitled application as follows:

IN THE SPECIFICATION:

Page 1, line 13, after "waveform" but before the period. insert —, thereby to minimize the required input current for a given power output —.

Page 2, line 11, cancel the semicolon (;).

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IN THE CLAIMS:

Cancel claims 2, 3, 4, 5 and 6. Rewrite claims 1 and 7. Retain claims 8 and 9.

1. (Amended) In a switched power supply: a rectifier adapted to be connected to the alternating current line; a *boost* converter connected to the output of said rectifier, said converter including an input circuit having a series-connected inductance coil and an output circuit having a shunt-connected storage capacitor, and further including a power switch connected between the inductance coil and the storage capacitor; and a control circuit connected to said power switch for providing a switching control signal for said converter having a current reference [tracking] *which tracks* the waveform of the alternating current line voltage to cause the power supply to exhibit unity power factor to the alternating current line, *said control circuit including a voltage error amplifier connected to the output of said converter and to a source of reference voltage for producing an output which is a function of the difference between the output voltage of the converter and the reference voltage from the source, a switching analog multiplier circuit connected to the output of said voltage error amplifier and to the output of said rectifier to produce an output which is proportional to the output of said voltage error amplifier multiplied by the instantaneous line voltage and divided by the RMS line voltage squared, a current regulator amplifier connected to the converter and to the multiplier and responsive to a voltage representing the current flow in the converter and to the output of the multiplier for producing a current error signal, and circuit means including a*

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pulse-width modulator connected to said current regulator amplifier and responsive to said current error signal therefrom for introducing said switching control signal to said power switch.

2. (Amended) The combination defined in claim [6] *1*, in which said *pulse-width* multiplier is a switching type, and in which said control circuit includes a timer and ramp signal generator for supplying clock signals to said switching multiplier and ramp signals to said pulse width modulator.

REMARKS

The Abstract has been revised to comply with the Examiner's requirements. The error on Page 2, line 11 has been corrected.

Claims 2-6 have been cancelled, and the subject matter of those claims has been incorporated into amended claim 1.

Claim 7 has been amended so that it may depend on amended claim 1, and also in order that the multiplier recited in claim 7 may be specified as a "pulse-width" type.

The amended claim 1 recites in precise details the various elements and components of the overall combination of the invention which results in the switched power supply having the desired characteristics representing the intendments and purpose of the present invention.

It is believed clear that there is no showing in the cited Carpenter Patent 4,437,146 of the specific combination set

forth in amended claim 1. It is also noted that amended claim 1 represents original claim 6 in independent form, and that claim 6 has been amended to overcome the objection raised under 35 USC 112. Accordingly, amended claim 1 is believed to be allowable.

Amended claim 7 and claims 8 and 9 are all dependent on amended claim 1, and are likewise believed to be allowable.

Pursuant to the Examiner's request, a copy of the Mohan et al article is submitted.

Appropriate corrections will be made to FIGURES 1 and 7 so that the heading space requirements will be fulfilled, upon the allowance of this application.

Respectfully submitted,

s/ Keith D. Beecher
Keith D. Beecher
Attorney for Applicants
(Reg. #16,344)

Santa Monica, California 90403

October 30, 1986

Area 213
829-4525